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Recent Botanical Publications from the United States National Museum

BY THEO. HOLM

We are so accustomed to receive voluminous reports "for the increase and diffusion of knowledge among men" that we have almost ceased to ask ourselves what is meant by knowledge. What is knowledge or not knowledge depends of course on the point of view. Some are still holding the view that knowledge constitutes something more than what is being brought forth by recent discoveries; that it embodies also a thorough, faithful appreciation of the work of our old masters; others are so easily contented that anything "in print" bearing a title of something new and scientific strikes them as knowledge. Still a third class of knowledge seems to exist, one which pretends to be so, but which actually contributes nothing either old or new, and goes even so far as to belittle the labors of honest investigators.

As far as botany is concerned, botanical knowledge rests, and will always rest upon a structure of the past, and surely the floral kingdom has in itself a claim to be our safest guide to serious work. It would, so to speak, be almost beyond our ken to imagine that botanical science should ever suffer abuse in the hands of the vulgar.—And he is not a botanist, who does not honor the science as a precious gift, rendered accessible to us by such brilliant men as Linné, Lamarck, De Candolle, Elias Fries, Lindley, Robert Brown, Kunth and many others. In the writings of these men we have an absolute proof of the conscientious way, in which they worked; they worked for the science itself, by a method purely scientific. Small as were the means with which they worked, simple and modest their aspirations, but grand their results. For sincerity was at the bottom of it all.

Scientific discoveries carry great weight as a contribution

to knowledge, but equally as great is the accomplishment of such labor, which simply emphasizes the aim of making knowledge accessible to others, to lay-men; to pave the way for the young student, the beginning botanist, calls for exact truthful knowledge acquired by a study of the living plants, and literary research.

Some four hundred years ago botany was taught by means of illustrating and describing the plants. Classification was not attempted beyond "herbs, shrubs and trees," and sometimes the plants were enumerated simply alphabetically. But the illustrations, wood-cuts, were remarkably true; they were drawn by artists from nature, and skilled botanists may readily recognize the species, which they represent. For instance, the wood-cuts in Fuchs' *Historia stirpium* 1542 give a very characteristic figure of the respective plant; see for instance the drawings of Paris, *Ranunculus Colchicum*, *Fragaria*, *Orchis*, *Listera*, *Botrychium*, *Scolopendrium* and numerous others. At that time the diagnoses were but imperfect, the illustrations were the principal means of recognizing the plant. It became the merit of an Italian, Luca Ghini, to make the first herbarium, and his pupils, Aldrovandi and Caesalpino followed his example. In other words botany of the sixteenth century was taught through illustrations, herbarium-specimens and diagnoses. Two hundred years afterwards, Linné wrote his *Philosophia Botanica* (1751), in which he introduced the botanical terminology; the construction of the diagnoses thus became facilitated, or let us say simplified. He went still further, for he elaborated also an artificial system, by which the student might readily determine the genera. We all know, however, that Linné did believe in the possibility of establishing a natural system, and he actually proposed 67 groups or orders; these he enumerated in *Philosophia Botanica* "*Methodi naturalis fragmenta studiose inquirenda sunt. Plantae omnes utrinque affinitatem monstrant, uti Territorium in Mappa geographica.*"

The first attempt to describe the natural families we owe to Antoine Laurent de Jussieu, the author of *Genera plantarum secundum ordines naturales disposita* (Paris 1789); since then several other natural systems have been proposed, notably by Endlicher, Brongniart, Lindley, De Candolle, and Engler and Prantl.

In the nineteenth century systematic Botany became well established; preference was given to the natural system; the diagnostic part became extended by numerous morphological investigations, clearing up the formerly difficult problem of distinguishing between roots and subterranean stems, beside explaining the ramification of the shoot, and the floral structure.

Thus botanical activity has during the last two hundred years shown steady progress, and systematic botany especially was well founded before the close of the nineteenth century. Furthermore, in the nineteenth century botanical manuals were published all over the world; the vegetation of the various countries became known through the "Floras;" the geographical distribution and the descriptions of the plants received much attention. But of course it did take some time before the systematists became able to grasp the morphological improvements, so as to construe the diagnoses in perfect harmony with the results contributed by the morphologists. Nevertheless long before the close of the nineteenth century most of the Floras and manuals were elaborated in conformity with scientific Botany. Through all these years the aim of botanical teaching has been identically the same; to distribute knowledge of the past and of the present; to encourage botanical research, and to guide the student in a progressive way. Any effort in the opposite direction would be unscientific; it would be so completely adverse to the spirit and labors of our predecessors, that such effort could not possibly be effectual nor accounted for except by inexcusable ignorance. Nevertheless, we have some volumes before us of a very recent date: 1919 and 1921, published under the auspices of Smithsonian Institution, Washington, D. C., and these volumes tend to make the public believe that "our books on botany, instead of opening the path to knowledge, close it with a barrier of technical language." It would be interesting to know what books are meant by "our books on botany;" presumably those published in this country, by Torrey and Gray for instance. Furthermore the statement is made that "Botanical science is beginning to recognize the prohibitive effect of this barrier and to take steps to open the path to the public," by using

"common words as substitutes for technical and unusual words." *

It seems difficult to appreciate that such introductory remarks could possibly be endorsed by the highly esteemed Smithsonian Institution, and especially when applied to a work dealing with the flora of the District of Columbia. Are we really compelled to believe that Farlow's words: "There is something in the air of Washington which seems to make it inevitable that those in the government employ should believe that it is the business of the government to undertake or control all scientific work" † are still applicable to the scientific departments in Washington. So far as concerns the so-called "botanical" work conducted by the Smithsonian Institution it is so, and even to a more lamentable extent than expressed by Farlow.

In presenting to the readers of the AMERICAN MIDLAND NATURALIST a brief analysis of some of these works, we freely admit that the American scientists are not in need of being told about the status of Botany four hundred years ago, nor of elementary Botany at present; we have ventured, however, to insert the preceding brief, much too incomplete, sketch of previous botanical activity in order to render the contrast more clear, when comparing the recent botanical publications, which will be discussed in the subsequent pages.

Let us begin with the *Flora of the District of Columbia* (l. c.) 329 pages and 57 photographs. Some sort of botanical legislation is introduced in the first pages: I. Keys with common words as substitutes for technical and unusual words. II. All the species admitted to the formal list are based upon specimens in the National Herbarium. III. The nomenclature is in accord with the American Code of Botanical Nomenclature, except that so-called duplicate binomials are not used.

When complying with, or let us say if we are in the position to fully appreciate these principles of Smithsonian Botany, we are told, that "a person with almost no knowledge of botany can trace a strange plant to its proper family."

**Flora of the District of Columbia and vicinity*, by A. S. Hitchcock and Paul C. Standley with the assistance of the botanists of Washington. The preface by F. V. Coville, Curator of the U. S. National Herbarium. Contrib. U. S. Natl. Herb. Vol. 21. Washington 1919.

† The popular conception of the scientific man at the present day. *Science* January 5, 1906.

As if it ever were within the scope of the publications from the Smithsonian Institution to include elementary works, written for "persons with almost no knowledge?" It would perhaps have been better to say "with no knowledge at all," or to omit the notorious word knowledge altogether; "knowledge" is a word much too technical and unusual to be used in this connection.

Now with regard to the contents of this volume, there is a so-called "systematic treatment of the vascular plants" in the manner of keys to the families (in some cases to the genera) based mainly on "vegetative characters," and "on floral characters." Then follows an annotated list of species, accompanied by keys to the species in each family, as well as a brief description of the families; a glossary is appended. The photographs show several landscapes from the region, and about 30 species of the commoner plants.

A systematic treatment of the vascular plants must naturally call for some "system;" the system adopted is: I. Trees and shrubs. II. Herbaceous plants. In other words we are brought back to some four hundred years ago. The "trees and shrubs" commence with Cactaceae, followed by Pinaceae, Ranunculaceae, Staphyleaceae, Fraxinus, Sambucus, Robinia, etc. The "herbs" commence with Juncaceae, followed by Poaceae, Cyperaceae, Lemnaceae, Hydrocotyle, Nymphaeaceae, Callitrichaceae, Potamogetonaceae, etc. This chapter, which occupies 30 pages, contains the two keys, mentioned above; one based on vegetative characters, another on floral characters. The first to be treated according to "floral characters" are the Pteridophyta, ferns and fern-allies. Then follow the Gymnospermae. The Monocotyledoneae begin with Lemnaceae, and end with Iridaceae. In the Dicotyledoneae two divisions are adopted: Choripetalae and Gamopetalae. Of these the former commences with Salicaceae, ending with Lythraceae; the Gamopetalae commence with Monotropsis, followed by Vacciniaceae, Ericaceae, Diospyraceae, etc., ending with Solanaceae. Immediately following this systematic treatment of the vascular plants, we have the "annotated list of species," said to include "all indigenous plants and all introduced ones that have become established" (l. c. p. 15). "All the species admitted to the formal list are based upon specimens in the

National Herbarium," while "species reported but not supported by specimens have been mentioned in notes." And these "notes" refer to some foot-notes, where titles and authors are given of papers previously published on the Flora in question. Thus the fate of most of the interesting species which have been collected in the District, but which "have not been presented to the National Herbarium," is unequivocal—they have been wilfully ignored. And this is not the first time that such procedure has been adopted and approved by the Smithsonian Institution; in these same Contributions from the National Museum, Vol. 15, 1910, we have a monograph of *Panicum*, where a similar discourtesy has been awarded for failing to supply the National Herbarium with specimens.

Let us now examine the merits of the keys, which according to Mr. Coville, (l. c.), enable persons with almost no knowledge of botany to trace a strange plant to its proper family. These keys, we are told, are based mainly on vegetative characters, but these characters do not include the numerous and very important structures of the subterranean organs, nor of the inflorescences; the foliage is the only one, which has been considered. Although the description of the leaves would have been a very simple matter to handle, it is readily to be seen that it must have been more than troublesome to the authors. For by looking through the keys we notice at a first glance that the authors were unable to distinguish between leaf and leaflet, and between leaflet and segment; even the outline of simple leaves has been misunderstood. The reader will see, for instance, on page 22, how the Fabaceae and *Parthenocissus* are distinguished: "Leaves of 3 or 5 digitate leaflets," "leaflets 3 entire" (Fab.), and "leaflets 5, toothed" (Parthenoc). What is really meant by a leaflet being digitate and at the same time entire seems conjectural. We observe the same misinterpretation on page 30, where the leaf of *Cannabis* is called "leaf of 5-7 digitate leaflets," and "leaves with 5-7 palmate equal leaflets" are credited to the *Capparidaceae*. When Linné, some two hundred years ago, described *Cannabis* and *Cleome*, he wrote: "foliis digitatis," and so they have been called ever since until the publication of the present Flora. Then with respect to leaf-

lets and segments, no distinction seems possible according to the key. Because as we see from page 30 *Erodium* is said to have a leaf with numerous leaflets, the *Caesalpiniaceae*, on the other hand, ten or more leaflets; on page 29 we see a group of plants distinguished by having the leaves compound, of 2 or more leaflets; in this assemblage we meet with: Leaflets 3, entire in *Ionoxalis*; leaflets more than 3, much divided in *Bikukulla*; leaflets 3 in *Prenanthes*; leaflets more than 3 in *Ambrosia*, etc., in other words segments have been mistaken for leaflets. The chapter on "folium" in Linné's *Philosophia botanica* shows how to distinguish between "folium simplex" and "folium compositum." And when an outline so simple as that of the leaf of *Hydrocotyle Americana* cannot be described in any other way than "peltate," it seems just to conclude that no attention has been given to the terminology.

Furthermore regarding *Hydrocotyle* (page 28), it would be absolutely impossible to distinguish this plant (*H. Americana*) with the leaf said to be peltate and the "Corolla of united petals." "Foliis reniformibus" is the character given by Linné (*Species plant*). Under the *Araceae* *Acorus* is described as follows: "Flower-spike naked, borne on a long stalk, the stalk prolonged above the spike!" The inflorescence is a spadix, not a spike, and Torrey (*Flora of New York* 1843) described the spathe correctly "leaflike, continuous with the scape." The very few instances where the authors have mentioned the subterranean organs, do also illustrate a remarkable ignorance. The *Fumariaceae* (page 163) are said to have "tuberous or bulblike roots," and *Bikukulla canadensis* is distinguished from *B. cucullaria* by the "roots with tubers," while "bulblike roots" are credited to the latter. This seems the more remarkable inasmuch as already Torrey (l. c. 1843) gave an excellent description: Rhizoma not creeping, bulbiferous; the bulbs formed of fleshy triangular scales (the thickened and persistent bases of petioles, filled with starch), mostly acuminate, reddish externally where exposed to the air, white when subterranean (*Dicentra Cucullaria*); a correspondingly exact description is also given of *D. Canadensis*. Torrey's descriptions were republished by Gray in his *Manual of Botany*, 1857.

Our interesting little Orchid *Corallorhiza* is also one of the

few plants, of which the subterranean organs have been mentioned; very unfortunately, however, for the description reads "roots coral-like" (page 127). Irmisch in his classic work on the biology and morphology of the Orchids (1853) described the European species demonstrating that the subterranean coral-like organ is a rhizome, and not a root, as described by Clusius "*radix ramosa corallii instar*" (1601). And considering *Cirsium arvense* (page 292), one of our most troublesome weeds, this does not multiply by rootstocks, but by the roots producing shoots in abundance, a matter that has been described repeatedly in this country and abroad.

The structure of the inflorescence, the flowers and the fruits are so vaguely touched upon or misunderstood that no definite conclusion may be drawn from the descriptions. We shall confine ourselves to mention a few cases. In *Betulaceae* (page 136) the fruit and seed are described as: "seeds winged, fruit ovoid or oblong!" But Lamarck and De Candolle have many years ago given the correct description namely: "*l'enveloppe de la graine est membraneuse sur les bords, comme celle de l'orme*" (*Flore Française* 1807); moreover Elias Fries (*Flora Scanica* 1835) writes "*fructu alato*"; Kunth (*Flora Berolinensis* 1838) in the same manner "*fructus utrinque alati*!" and finally Torrey (l. c. 1843) writes: "fruit a little one-celled nut, which is often winged."

The fruits of *Magnolia* and *Liriodendron* are called "cones" (page 161); the fruit is a syncarp, with the carpels more or less united in *Magnolia*, but free in *Liriodendron*; the last genus has winged achenes. The grass-flower has also received a remarkable description, which may neither be considered popular nor in any way correct. It is said (page 66) to "consist normally of a pistil and 3 stamens contained between 2 small bracts, these being aggregated in spikelets. The lowermost pair of bracts (glumes) are without flowers. The succeeding bracts (lemmas) have flowers, and an inner bract (palea) next the rachilla." In order to readily distinguish the Grasses from the Sedges, the key (page 28) renders great assistance viz., "stems round," "flowers with two bracts, one below and one above—*Poaceae*."

In comparing these few examples we naturally feel inclined to believe, that the reason why common words have been used

as substitutes for technical and unusual words in the "keys" was not because technical terms would be a barrier to the student, but because they would have been a barrier to the authors themselves.

It seems therefore natural to expect that this same kind of so-called "terminology" will be adopted in future works to be published by the Smithsonian Institution. As a matter of fact one has already been published, namely *Flora of Glacier National Park, Montana*, by Mr. Paul C. Standley.* The scope and style of this paper corresponds exactly with the preceding; the key is constructed in the same manner, and contains similar erroneous statements. Some few of these may be mentioned. "Fruit conelike, seeds not hairy, *Betula-ceae*;" "Leaflets more than 3, some attached along the sides of the petiole, *Brassicaceae*," "Leaves with 3 or more digitate or pinnate leaflets, *Potentilla*;" "petals 2 or 5, *Onagraceae*;" "fruit composed of several cells, these falling apart like the sections of an orange, *Sphaeralcea*;" "the roots bear cylindric watery tubers, *Circaea*;" "roots coral-like, *Carallorhiza*;" "root-stocks creeping, *Rumex Acetosella*;" "root-stocks long, *Cirsium arvense*;" "sepals 5 spurred at the top, *Myosurus*."

Returning to the *Flora of the District of Columbia*, it is said in the introduction that "All the species admitted to the formal list are based upon specimens in the District *Flora Herbarium*." "Species reported but which are not supported by specimens have been mentioned in notes." Nevertheless *Arethusa* is not represented except by two specimens from Pennsylvania and New Jersey! There are no specimens of *Kyllinga*, and many of the plants stated as being common or frequent are only represented by a few specimens. On the other hand several species, which have been reported by me as new to the District have been ignored completely, not speaking of the numerous new localities recorded for some of the rare species. For instance in my third list of additions to the *Flora of Washington, D. C.* (1892), I have reported *Ilex glabra* Gray from near Silver Hill, and in the fourth list (1896) this species was reported also from the woods between Camp Spring and Surattsville. From Scott's Run, Va., I have reported such interesting and rare plants as *Aralia quinque-*

* Contrib. U. S. Natl. Mus. Vol. 22. Part 5, Washington, 1921, p. 235-438.

folia, Jeffersonia, Caulophyllum, Papaver dubium, etc., none of which have been mentioned; from High Island Carex Careyana; from the woods and swamps near Suratteville a number of rare species viz. Glyceria obtusa, Rhyncospora gracilentia, Utricularia subulata, etc.; and from Marshall Hall Kyllinga, Trifolium minus, Gnaphalium uliginosum, Quercus heterophylla and many others.

It is really strange to see that Gnaphalium uliginosum in the new Flora of D. C. is credited to Professor Ward with the remark "not collected since 1884," nevertheless I have reported it from Marshall Hall and Hyattsville, in the fifth list of additions (1901).

Danthonia sericea I have reported from near Highland, Fimbristylis laxa from Hyattsville, etc., but neither the specimens collected nor the lists published in the Proceedings of the Biological society of Washington (1892, 1896 and 1901), have been of any interest to the authors of the new Flora. It would, however, have been of interest to the student to get as complete a list as possible, not only for the sake of collecting the plants, but also in order to become acquainted with their distribution within the District. In this respect the student learns very little, for the authors too frequently use the word "common" for species which are actually rare; moreover the localities are not given for quite a number of the species said to be rare. In the genus Polygala for instance several species are said to be frequent, although they are relatively rare; no localities are given for several of these, and they are represented by specimens from localities very scattered, and by relatively few specimens.

In the Orchideae no localities are given for the several species of Habenaria except H. cristata, and they are but scantily represented in the Herbarium. No locality is given for the rare Triphora, nor for Corallorhiza maculata; of these the latter is represented by two detached flowers only, collected near Chevy Chase, and by a specimen from Northern New York.

If the student should wish to see these Orchids in the herbarium, he will not find them under the generic names given in the new Flora, for the covers are not labeled Habenaria, but Gymnadeniopsis, Perularia and Blephariglottis; Cypr-

pedium acaule is labeled *Fissipes*, and *Orchis* is labeled *Galeorchis*. Moreover *Polygonum Convolvulus* is in a cover marked *Tiniaria* instead of *Bilderdykia*; *Oxalis violacea* and *O. stricta* are both labeled *Oxalis*, while the nomenclature calls for *Ionoxalis* and *Xanthoxalis*, etc.

In other words the nomenclature followed in the book is not always in accord with the one in the District Herbarium, which, of course, makes it rather inconvenient to the student. As a matter of fact the student will be obliged to locate the genera in the herbarium by means of the synonyms given in the *Flora*, and afterwards consult Gray's *Manual* in order to find a correct diagnosis.

With respect to the distribution of the plants as given in the present work, it would have been a great advantage, if the authors had read Professor Brainerd's *Flora of Vermont*. In this excellent little book the author indicates the degree of frequency of occurrence by means of four adjectives: common, frequent, occasional and rare; these terms are well explained. Moreover Professor Brainerd holds the view, that "it is always a matter of justice to botanical explorers and of interest and stimulus to others to insert the names of the station and of the discoverer of a rare plant." But the new *Flora of the District* does not give much credit in this respect and seems more inclined to belittle and ignore the work of others. The logical conclusion actually appears to be that the aim of the new *Flora* is not to open the path to knowledge of the *Flora of the District of Columbia*, but of the *Flora of the National Herbarium*.

Exactly the same principle has been followed in another publication from the U. S. Natl. Museum, namely "The North American Species of *Panicum*" by Prof. Hitchcock and Mrs. Chase (1910). In this voluminous publication credit is given only to those who presented their specimens to the National Herbarium. Although Professor Hitchcock borrowed my complete collection of *Panicum* from D. C., Virginia, Maryland and Florida, and although most of the rarer species had been recorded in lists of additions, I received no credit whatever. Such procedure is unfair, and does not encourage one to render further assistance. Any effort to monopolize scien-

tific work is so contrary to science, that the inevitable result will necessarily be anything but scientific.

Now with reference to the nomenclature, we have seen from the preceding, that the so-called American Code of Botanical Nomenclature has been followed except that duplicate binomials have not been used. It is not necessary to discuss at length the merits of this Code, nor its disturbing influence; its lack of consistency has long ago been attested by various authors of prominence, for instance by Professor M. L. Fernald,* not to mention the fact that most of our eminent botanists published a signed protest against it.

In the accompanying table I have selected, at random, 16 genera from Gray's Manual in order to give the reader some idea of the changes involved by introducing this nomenclature, the so-called American. According to this table the 16 genera taken from Gray's Manual (1857) represent not less than 28 in the new Flora of the District of Columbia; while only one of these (*Andromeda*) has been divided into two genera in the last edition of the Manual. The only other change is the placing of *Negundo* under *Acer*.

* Bot. Gaz. Vol. 31 and 32, 1901.

Gray's Manual 1857	Gray's Manual 1908	Ward's Flora 1881	Britton and Brown's Illus- trated Flora 1896	Britton and Brown's Illus- trated Flora 1913	Flora of the District of Co- lumbia 1919
<i>Cacalia atriplicifolia</i>	<i>Cacalia</i>	<i>Cacalia</i>	<i>Mesadenia</i>	<i>Mesadenia</i>	<i>Mesadenia</i>
<i>Cacalia suaveolens</i>	<i>Cacalia</i>	<i>Cacalia</i>	<i>Synosma</i>	<i>Synosma</i>	<i>Synosma</i>
<i>Erigeron Canadensis</i>	<i>Erigeron</i>	<i>Erigeron</i>	<i>Leptilon</i>	<i>Leptilon</i>	<i>Leptilon</i>
<i>Actinomeris squarrosa</i>	<i>Actinomeris</i>	<i>Actinomeris</i>	<i>Vesbesina</i>	<i>Ridan</i>	<i>Ridan</i>
<i>Gerardia pedicularia</i>	<i>Gerardia</i>	<i>Gerardia</i>	<i>Dasystoma</i>	<i>Dasystoma</i>	<i>Aureolaria</i>
<i>Gerardia purpurea</i>	<i>Gerardia</i>	<i>Gerardia</i>	<i>Gerardia</i>	<i>Agalinis</i>	<i>Agalinis</i>
<i>Gerardia auriculata</i>	<i>Gerardia</i>	<i>Gerardia</i>	<i>Gerardia</i>	<i>Otophylla</i>	<i>Otophylla</i>
<i>Leucothoe racemosa</i>	<i>Leucothoe</i>	<i>Leucothoe</i>	<i>Leucothoe</i>	<i>Eubotrys</i>	<i>Eubotrys</i>
<i>Andromeda Mariana</i>	<i>Pieris</i>	<i>Andromeda</i>	<i>Pieris</i>	<i>Neopieris</i>	<i>Neopieris</i>
<i>Andromeda ligustrina</i>	<i>Xolisma</i>	<i>Andromeda</i>	<i>Xolisma</i>	<i>Xolisma</i>	<i>Xolisma</i>
<i>Oenothera sinuata</i>	<i>Oenothera</i>	<i>Oenothera</i>	<i>Oenothera</i>	<i>Raimannia</i>	<i>Raimannia</i>
<i>Oenothera fruticosa</i>	<i>Oenothera</i>	<i>Oenothera</i>	<i>Kneiffia</i>	<i>Kneiffia</i>	<i>Kneiffia</i>
<i>Negundo aceroides</i>	<i>Acer</i>	<i>Negundo</i>	<i>Acer</i>	<i>Acer</i>	<i>Rulac</i>
<i>Apios tuberosa</i>	<i>Apios</i>	<i>Apios</i>	<i>Apios</i>	<i>Glycine</i>	<i>Glycine</i>
<i>Amphicarpaea</i>	<i>Amphicarpaea</i>	<i>Amphicarpaea</i>	<i>Falcata</i>	<i>Falcata</i>	<i>Falcata</i>
<i>Holcus lanatus</i>	<i>Holcus</i>	<i>Holcus</i>	<i>Holcus</i>	<i>Nothololcus</i>	<i>Nothololcus</i>
<i>Erysimum cheiranthoides</i>	<i>Erysimum</i>	<i>Erysimum</i>	<i>Erysimum</i>	<i>Cheirinia</i>	<i>Cheirinia</i>
<i>Polygonum aviculare</i>	<i>Polygonum</i>	<i>Polygonum</i>	<i>Polygonum</i>	<i>Polygonum</i>	<i>Polygonum</i>
<i>Polygonum Virginianum</i>	<i>Polygonum</i>	<i>Polygonum</i>	<i>Polygonum</i>	<i>Tovara</i>	<i>Tovara</i>
<i>Polygonum Hydropiper</i>	<i>Polygonum</i>	<i>Polygonum</i>	<i>Polygonum</i>	<i>Persicaria</i>	<i>Persicaria</i>
<i>Polygonum Convolvulus</i>	<i>Polygonum</i>	<i>Polygonum</i>	<i>Polygonum</i>	<i>Tiniaria</i>	<i>Bilderdykia</i>
<i>Polygonum sagittatum</i>	<i>Polygonum</i>	<i>Polygonum</i>	<i>Polygonum</i>	<i>Tracaulon</i>	<i>Tracaulon</i>
<i>Barbarea</i>	<i>Barbarea</i>	<i>Barbarea</i>	<i>Barbarea</i>	<i>Barbarea</i>	<i>Campe</i>
<i>Sisymbrium officinale</i>	<i>Sisymbrium</i>	<i>Sisymbrium</i>	<i>Sisymbrium</i>	<i>Erysimum</i>	<i>Erysimum</i>
<i>Sisymbrium altissimum</i>	<i>Sisymbrium</i>	<i>Sisymbrium</i>	<i>Sisymbrium</i>	<i>Norta</i>	<i>Norta</i>
<i>Sisymbrium Thalianum</i>	<i>Sisymbrium</i>	<i>Sisymbrium</i>	<i>Stenophragma</i>	<i>Arabidopsis</i>	<i>Arabidopsis</i>
<i>Oxalis violacea</i>	<i>Oxalis</i>	<i>Oxalis</i>	<i>Oxalis</i>	<i>Ionoxalis</i>	<i>Ionoxalis</i>
<i>Oxalis stricta</i>	<i>Oxalis</i>	<i>Oxalis</i>	<i>Oxalis</i>	<i>Xanthoxalis</i>	<i>Xanthoxalis</i>

Of the 16 names adopted in the first edition of the Manual only *Xolisma* and a part of *Polygonum* have been preserved in the District Flora; some others are even different from those adopted by Dr. Britton, viz. *Aureolaria*, *Rulac*, *Notholcus*, *Bilderdykia* and *Campe*. If we compare *Polygonum* with this genus in Glacier Park Flora (l. c.), we notice that *Bilderdykia*, *Persicaria* and *Bistorta* are all included in *Polygonum*. It is also interesting to compare the names of Britton and Brown's Illustr. Flora of 1896 with those adopted in the second edition, 1913; according to the table the second edition of Britton and Brown's Ill. Flora contains not less than 18 names, which differ from those adopted in the first edition. This comparison includes only 16 genera adopted by Gray (1857); if we had extended it to all the genera accepted by Gray, the number of changes would be immense. So after all the American Code of nomenclature cannot boast of either stability or consistency.

Most of the writings of the advocates of this code disclose a further characteristic, which it seems would tend to upset the stability of much of their nomenclature. This is the absurd and preposterous method of name-formation adopted by many of these. We remember for instance *Galeorchis*, *Rubacer*, *Saxifragopsis*, *Stellariopsis*, and among the specific names such as: *Yellowstonensis*, *Coloradoensis*, *perglobosa*, *tumulicola*, *nubicola*, *fissuricola*, *concinnoides*, *graminoides*, *pseudorepens*, *pseudospectabilis*, *pseudopubescens*, etc. Violent crosses are rarely stable.

I beg leave to recommend the reading of Alph. De Candolle's paper "Lois de la nomenclature botanique" (Paris 1867), where we are told to reject such names as are a combination of two languages *eu* used with a latin name, *sub* with a greek, *oides*, *opsis*, *pseudo* with a latin, etc. The fact that such names actually exist and still are being proposed does not speak in favor of the authors being capable of interpreting even the simplest diagnosis in latin. No wonder the American Code does not demand the diagnoses of new species to be written in latin! In consequence of such facts we are entitled to doubt the correctness of many of the nomenclatorial changes proposed by these authors.

From a merely practical point of view the steadily proposed

changes of names are the cause of great annoyance. I have received several letters from European correspondents, who feel at a loss to keep track of all these changes; especially when exchanging specimens with American Institutions. A recent letter complains that the same genera have been sent to Europe under several different names. And the same would be the case, of course, if specimens of *Polygonum Convolvulus* were distributed by the Smithsonian Institution some under the name *Tiniaria*, others as *Bilderdykia* and still others as *Polygonum*. Similarly, a recent change of *Hierochloa* would result in species if this genus being sent under the name of *Hierochloa* by Harvard University, *Savastana* by the New York Bot. Garden, and *Torresia* by the Smithsonian Institution; for in the Flora of the Glacier National Park the last name, *Torresia*, is introduced by Professor Hitchcock as the oldest name.

As the main points, which characterize this new Flora of the District of Columbia I have cited: I. The introduction of common words as substitutes for technical and unusual words. II. The species being based upon specimens in the National Herbarium, and III. The nomenclature being in accord with the American Code of botanical nomenclature. Would it not have served the purpose better, if this book as well as the Flora of Glacier National Park, had been written in conformity with scientific Botany? So far as concerns the Flora of D. C., this might have been written in the same style as the local Floras published abroad. Among these Flora *Berolinensis* by Kunth (1838), and Flora *excursoria Hafniensis* by Drejer (1838) may be mentioned as examples. I wish also to refer to Schuyler Mathew's excellent Field book of American wild flowers (new edition 1912). Thus if the new Flora of the District of Columbia and the Glacier National Park had been elaborated similar to the booklets mentioned above some knowledge would certainly have been gained. But as the books are written, they contain little knowledge, and offer less. They actually "close the path to knowledge with a barrier" of wrong descriptions; wrong application of botanical terms, by following an inconsistent code of nomenclature; by including only such plants as are incorporated in the National Herbarium; by omitting many

important localities, and by ignoring the numerous observations that have been published during the last 30 years on the natural history of our native plants.

Considering the large size of some of the volumes published by the Smithsonian Institution, entitled Contributions from the U. S. National Herbarium, it seems more than strange that said Institution, now for 8 years, has withheld Dr. Edw. L. Greene's second volume of Botanical Landmarks. Dr. Greene's painstaking work deserved a better fate; for when considered in comparison with the works discussed in the preceding pages one can scarcely doubt that Dr. Greene's history is better fitted to fulfill the function for which the Smithsonian Institution avowedly exists, i. e. "For the diffusion of knowledge among men."

In bringing this discussion to a close, I cannot abstain from expressing the opinion about the new Flora of the District of Columbia, that its aim was not to distribute knowledge among men; but rather to enforce the Brittonian nomenclature, to apotheosize the National Herbarium, and to distribute among men, in the guise of scientific authority, an unprecedented ignorance of elementary Botany.

Clinton, Md., June 1921.

Notes on the Habits of the Soft-Shell Turtle—*Amyda Mutica*.

BY J. F. MULLER, J. H. U.

The observations forming the basis of this article were made on an island of the Mississippi River, about a mile above Fairport, Iowa, and on the Illinois side, while the writer was serving in the Bureau of Fisheries. This island was very typical of the large number scattered along the river. Approximately triangular in shape, it was bounded on the north by the open river, on the south by a narrow channel, or slough, between it and another island, on the east by another channel and island, and on the west by an area of shallow